their admissions to those of a certain character. Of the former description are the Massachusetts State Lunatic Hospital, at Worcester, and the State Lunatic Asylum of Kentucky, and of the latter most of the others in the United States. Some, however, are more restricted than others. The same difference exists in Europe. The St. Luke's and Bethlehem Hospitals, of London, reject all persons "who have been insane more than a year, those affected by paralysis and epilepsy, and the aged and feeble." The Retreat near York rejects idiots and "those of a low grade of mental dilapidation."

Again, in making out their reports, the European institutions *reject the incurables* when estimating the per centage of cures; the same is true of the retreat at Hartford. Moreover, at the last mentioned asylum, no case is included in that estimate which has not been six months upon trial; while in some of the others, it is necessary to include every patient, even those who may have been received on the day on which the report is made.

Paris, 4th Mo. 12th, 1838.

ART. V. *Statistical account of the cases of Amputation performed at the Pennsylvania Hospital from January 1st,* 1831, *to January 1st,* 1838. By GEORGE W. NORRIS, M. D., one of the Surgeons.

In a large hospital no operation is more frequently called for than that of amputation, and even where the time for doing it is judiciously determined, and the operation itself dexterously and well performed, the dangers to which the patient is afterwards exposed, are so great as to render the subject worthy of all attention from the practical surgeon. Contrary to the opinion generally prevalent in this country, amputation, even under favourable circumstances, is very frequently followed by fatal results in civil hospitals. In the practice of the Hôtel Dieu, of Paris, it is said that not more than half of the cases prove successful,* and I have the authority of M. Hache, a former interne of the hospital of St. Louis, of the same city, for stating, that out of twenty successive amputations made in the year 1833, in that institution, twelve died. With one exception, (that of a toe,) all these were capital amputations, and at the time the statement was made some of the patients were remaining still uncured. Nor ought this great mortality to surprise us when all the dangers to which am-

* Gazette des Hôpitaux, 1834.

putation exposes, are maturely considered. The cutting off of a considerable part of the body destroys that equilibrium in the circulation of the blood and distribution of nervous influence, which is necessary to the healthy performance of the different functions, and must strongly predispose to, if it does not actually produce, inflammation of the thoracic or abdominal viscera; at the same time that the division of numerous veins, and the exposure of a large surface that in most cases takes on a suppurative action in at least a part of its extent, gives rise to that most common of all lesions in fatal cases, the formation of purulent depots in the principal internal organs.

At the Pennsylvania Hospital, as will be seen in the accompanying table, our success after amputation is not great. We shall briefly state the circumstances under which the operation is generally performed, the parts removed, mode of dressing, &c., in order that a fair comparison of our success may be made with that obtained in other similar institutions. The surgical division of the hospital is under the care of three practitioners, who attend in rotation each four months, and in all cases where an operation is deemed necessary, a consultation is previously held, and the full consent of the patient obtained. Most of the patients who suffered amputation for other than recent injuries, although labouring under diseases which were generally of long standing at the date of admission, were not operated upon until after they had remained a considerable length of time in the house.

The endeavours that have been constantly made for many years past, to save limbs under almost desperate circumstances, both in cases of chronic disease and recent injuries, has imperceptibly produced a great degree of unwillingness with us to the performance of amputation. In most, if not all of our cases, other than those in which it is required immediately on admission, it is long deferred, and hence is done under circumstances not so favourable to recovery as if performed at an earlier period. In caries of the knee, ankle, or wrist, affections which constitute the majority of chronic diseases calling for amputation, a cure is often attempted by means of perfect rest, attention to the general health, and alteratives, even when these joints are opened, and the bones completely softened. In other chronic diseases too, the same practice is carried very far in the attempt to save the limb; the operation not being done until repeated attacks of erysipelas, diarrhœa, heavy sweats, and wasting of the patient, make it the only chance of rescuing him from a certain and immediate death.

In compound fractures, or severely lacerated or comminuted limbs,

efforts are made to save them so long as even a bare possibility of success exists, and in many of these cases the patient afterwards either sinks too low to permit of amputation, or else has it done when large sloughs are being thrown off and joints opened, when gangrene is either threatened or has actually come on, or when the strength of the patient is exhausted by profuse suppuration or secondary hemorrhages, and his mind cast down from finding resort to an operation at last necessary, notwithstanding all the pains endured, and increased risks encountered in the attempt to avoid it. It is true that wonderful recoveries do sometimes take place in both classes of cases under the circumstances mentioned. We have witnessed them, particularly after complicated fractures. They are, however, exceptional cases, and we question whether the occasional success thus had, has not been procured at a considerable expense of life, by inducing a too long perseverance in efforts to save limbs in other almost desperate instances.

In thus stating our opinion of the past practice of the hospital on this point, we do not wish to be understood as advocating the sacrifice of limbs in all cases in which *some* risk is to be encountered in attempts to save them, but only to express our conviction that the practice pursued there is in this respect rather *ultra*. The first object of the surgeon is to save life, and the advantage sometimes gained of curing an apparently desperate case, though it may give reputation to an institution, and deserved eclat to a surgeon, is not, we think, sufficient to balance a single life lost in endeavours to add to a list of patients saved under such circumstances. I regret my inability to give the number of deaths which have occurred after accidents in cases where it became a question whether or not an attempt should be made to save the limb, and in which this practice was adopted. The mode in which the books of the hospital are kept precludes the possibility of getting such information from them, but for two years past I have carefully noted such cases, and shall at a future time make known the results. It is a common belief that many limbs are here cured, after severe injuries, which in most other hospitals would be amputated. No positive proof can be offered to support this opinion, though my own impressions, received from an internship of nearly three years in our hospital, and a subsequent residence in Paris of two years, with my attention directed particularly to the subject, leads me to think the statement correct, at least so far as regards the great hospitals of that city. Many limbs are saved in Philadelphia, both in chronic diseases and after injuries, that in Paris would, without hesitation, be amputated. In making this statement,

I do not in any way wish to censure the practice, or undervalue the surgery of that capital; various causes may require amputation for the cure of diseased or badly fractured limbs there, which same cases would do well here without it; a better class of patients, more vigorous constitutions, a less crowded state of wards, and better diet, are all circumstances greatly in our favour.

In the following tables, under the head of immediate amputations, are included all those in which the operation was performed within twenty-four hours after admission, the patient in such cases having been brought to the house immediately after the receipt of his injury. With a very few exceptions, the common circular amputation was performed, and the stumps were invariably dressed so as to procure union by the first intention. The ordinary mode of dressing is first to bring the flaps together by means of three or four long strips of adhesive plaster, and after covering the lips of the wound with lint spread with cerate, to apply a small cushion of tow over the extremity of the stump, and to secure the whole with a roller moderately tight. As a general rule, the first dressing is made on the third or fourth day, and repeated daily afterwards till cicatrization is complete. Torsion was in no instance resorted to for the suppression of hemorrhage. Ordinarily, opium was freely given, and a moderately good diet, easy of digestion, is allowed before, and soon after the operation, unless inflammatory symptoms arise. In no instance was there sufficient hemorrhage from the stump, after the operation, to require the removal of the dressings. All vessels are taken up that give out blood, even when very small, and the dressings are applied to the stump before the removal of the patient from the amphitheatre, which is generally done in ten or fifteen minutes after the operation is finished. In none of the operations that I have ever witnessed has the attempt at immediate reunion obtained a full and complete success. Not unfrequently I have seen a part of the wound united at the first dressing; but in all these cases there has always been a portion of it, other than that at which the ligatures pass out, which has suppurated. In two or three instances, I have known the edges of the skin forming the flap, completely adherent, without being in any degree attached to the bottom of the wound, so that the pus secreted has had no outlet, and the end of the stump has been soft and fluctuating, presenting all the appearances of an abscess.

No.	Admission.	Name.	Age.	Disease or Injury.	Part Amputated.	Immediate or otherwise.	Result.	Period of Discharge or Death.
	1830.							
1	May 7	Michael Boyle	29	Inflammation of the Knee.	Thigh.		Cured.	April 29, 1831.
2	May 24	John Pratt	18	Malignant Tumour.	Shoulder Joint.		Cured.	August 17, 1830.
3	Nov. 5	William Carson	21	Diseased Leg.	Thigh.		Cured.	February 9, 1831.
4	Dec. 18	Horace N. Banks	25	Fracture of the Humerus.	Arm.		Cured.	April 6, 1831.
	1831.							
5	Jan. 22	Jacob Hansen	33	Frosted.	Hand.		Cured.	September 17, 1831.
6	Feb. 28	George Lewis, C*	21	Sprain.	Thigh.		Cured.	May 21, 1831.
7	Aug. 5	Geo. Alexander, C	45	Compound Fracture of Leg.	Leg.		Cured.	June 6, 1832.
8	Sept. 26	Wm. Summerill	30	Dislocated Astragalus.	Leg.		Died.	April 5, 1833.
9	Nov. 14	Charles Wilson	27	Ulcer of the Leg.	Leg.		Cured.	March 24, 1832.
10	Dec. 12	John Haines	33	Frosted Hand.	Hand.		Cured.	May 23, 1832.
11	Dec. 13	Thomas Mullin	39	Compound Fracture of Fore-arm.	Fore-arm.	Immediate.	Cured.	February 13, 1832.
	1832.							
12	May 9	Eli Greger	28	Fractured Arm and Lacerated Hand.	Fore-arm.		Died.	June 17, 1832.
13	July 4	William H. Nutt	34	Lacerated Hand and Arm.	Arm.	Immediate.	Died.	July 7, 1832.
14	Oct. 3	Joshua Price	35	Compound Fracture of Leg.	Leg.	Immediate.	Cured.	February 20, 1833.
15	Oct. 6	Barney Sweeney	35	Compound Fracture of Leg.	Leg.		Died.	November 12, 1832.
16	Nov. 1	Joseph Mills	16	Lacerated Arm.	Arm.	Immediate.	Cured.	February 14, 1833.
17	Nov. 23	William Thomas	22	Lacerated Fore-arm.	Fore-arm.	Immediate.	Cured.	March 8, 1833.
18	Dec. 31	Jona. Cameron	34	Lacerated Wound of Hand.	Fore-arm.	Immediate.	Cured.	February 6, 1833.
	1833.							
19	Feb. 2	Edward Roberts	38	Gun-shot Wound of Hand.	Fore-arm.	Immediate.	Died.	February 3, 1833.
20	May 11	Charles Long	13	Comp. Fract. and Lacerated Fore-arm.	Fore-arm.	Immediate.	Cured.	July 6, 1833.
21	May 25	André Thévenin	18	Lacerated Hand and Arm.	Fore-arm.	Immediate.	Cured.	July 15, 1833.
22	June 3	William M'Ginnis	43	Compound Fracture of Leg.	Thigh.	Immediate.	Cured.	September 21, 1833.
23	June 3	John Connelly	40	Compound Fracture of Leg.	Thigh.	Immediate.	Died.	June 23, 1833.
24	June 22	Patrick Scullens	25	Compound Fracture of Elbow.	Arm.	Immediate.	Died.	June 25, 1833.
25	Sept. 23	William Causey	35	Compound Fracture of Leg.	Leg.		Died.	October 9, 1833.
	1834.							
26	March 19	Robert Robertson	11	Lacerated Fore-arm.	Fore-arm.	Immediate.	Cured.	May 11, 1834.
27	March 21	Revel Bibbins, C	25	Compound Fracture of Leg.	Leg.		Died.	April 15, 1834.

28	April 19	Charles Thomson	34	Inflammation of Knee Joint.	Thigh.		Died.	May 29, 1834.
29	April 23	William Taylor, C	31	Ulcers on the Leg.	Leg.		Died.	May 10, 1834.
30	July 14	James Fitzsimmons	22	Lacerated Wound of Ankle Joint.	Leg.		Died.	July 27, 1834.
31	Nov. 7	John Barnes	39	Lacerated Hand and Arm.	Arm.	Immediate.	Cured.	December 13, 1834.
32	Dec. 10	William Lindsay	20	Diseased Wrist.	Fore-arm.		Cured.	April 11, 1835.
33	Dec. 13 1835.	Henry Mivelaz	32	Diseased Knee Joint.	Thigh.		Cured.	May 6, 1835.
34	April 12	Andrew Murray	35	Wounded Hand.	Fore-arm.		Cured.	July 4, 1835.
35	April 25	Charles Berry	45	Ulcers of the Leg.	Leg.		Died.	June 20, 1835.
36	May 12	Ann Doan	18	Diseased Stump.	Leg.		Cured.	June 4, 1835.
37	May 21	Patrick Lafferty	26	Compound Fracture of Leg.	Leg.		Died.	June 6, 1835.
38	June 24	John Storey	17	Lacerated Arm.	Fore-arm.	Immediate.	Cured.	August 13, 1835.
39	August 23	Martin Maloney	17	Gun-shot Wound of Leg.	Leg.	Immediate.	Died.	September 4, 1835.
40	Sept. 6 1836.	Joseph Freer	23	Comp. Fracture of Thigh, (gun-shot.)	Thigh.	Immediate.	Died.	September 6, 1835.
41	March 11	Joseph Sterrett	26	Compound Fracture of Leg.	Leg.	Immediate.	Cured.	June 25, 1836.
42	March 2	Patrick Garvin	38	Frosted Feet.	Both feet, (part'l.)		Cured.	July 6, 1836.
43	March 5	James Thomson	22	Frosted Feet.	Foot, (partial.)		Cured.	September 8, 1836.
44	June 12	Francis M'Ilhone	21	Compound Fracture of Leg.	Leg.	Immediate.	Cured.	January 25, 1837.
45	July 23	John Bush	6	Lacerated and Fractured Thigh.	Thigh.	Immediate.	Cured.	December 6, 1836.
46	July 24	Joseph Merwine	46	Lacerated Foot.	Foot, (partial.)	Immediate.	Died.	July 31, 1836.
47	Sept. 2	John Keeling	22	Ulcers and Caries.	Leg.		Cured.	April 15, 1837.
48	Dec. 9 1837.	William Cammell	47	Compound Fracture of Knee.	Thigh.	Immediate.	Died.	December 10, 1836.
49	Feb. 1	Thomas Dawson	41	Ulcers.	Thigh.		Died.	April 11, 1837.
50	Feb. 27	Robert Blyth	50	Thigh torn off by machinery.	Thigh.	Immediate.	Died.	February 27, 1837.
51	August 19	John Dirkin	25	Compound Fracture of Wrist.	Arm.		Cured.	November 25, 1837.
52	Sept. 9	William Porter	45	Diseased Wrist.	Fore-arm.		Cured.	November 29, 1837.
53	Oct. 10	William Hays	29	Lacerated Hand.	Fore-arm.		Cured.	November 30, 1837.
54	Oct. 24	Leah Smith, C	24	Diseased Thigh.	Thigh.		Cured.	January 10, 1838.
55	Nov. 17	Absalom Lowry, C	29	Lac. arm & comp. disl. head of humerus.	Shoulder Joint.	Immediate.	Died.	November 20, 1837.

* Coloured.

On the above 55 patients 56 amputations were performed, of which 13 were of the thigh, 16 of the leg, 4 of the feet, 2 at the shoulder joint, 6 of the arm, 13 of the fore-arm, 2 of the hand.

Of the *thirteen thighs* amputated, 7 were for chronic diseases, and of these 5 recovered and 2 died. Among the recoveries were two well-marked cases of fungus hæmatodes. One of them occurred in the person of a young man aged 21, from Bellefonte, Pennsylvania, in whom the disease was seated in the calf of the leg. The glands in the ham were much enlarged, but the patient's general health was not affected. There was no enlargement of the glands in the groin. A tumour, situated on the back part of the leg, of the size of a partridge egg, and apparently seated just beneath the skin, had been noticed by him for upwards of six years, but this never gave him any uneasiness till seven or eight weeks before entering the hospital, when, without any known cause, it increased greatly in size, and became very painful. A physician, whom he consulted, mistook the disease for a deep seated abscess, and after blistering and poulticing, had plunged a bistouri into it; nothing but dark-coloured thin blood escaped from the opening. Amputation was done in November, 1830. The stump was not entirely cicatrized till the end of the ninth week, and a year since I understood that he was still alive and enjoying excellent health. The other case occurred in a coloured woman aged 24. The disease occupied the whole circumference of the thigh in its lower two-thirds, and had existed eighteen months. The limb was amputated very high up in November of last year, and eight weeks afterwards she was discharged, cured, and at this time has all the appearances of robust health.

The 6 cases amputated in consequence of accidental injuries, all had the operation done a few hours after admission, and of these 4 died, 3 within the twenty-four hours immediately following it; the other patient lived twenty days.

Of the *sixteen legs* amputated 7 were cured and 9 died. Of these, 11 were in consequence of injuries received, and 5 were for the cure of chronic affections. Of the 11 performed after injuries, 4 were immediate, and of these 3 were cured, and 1 died eleven days after the operation. Of the other 7 cases in which the amputation was not done till some days after the receipt of the injury, in consequence of attempts being made to save the limbs, 6 died and 1 recovered. Two of the deaths were within twenty-four hours after the operation, and the other 4 occurred in less than two weeks after it. Of the 5 amputated for chronic affections, 3 were cured and 2 died, both with metastatic abscesses.

Of the 4 amputations of the feet, 3 were for mortification from frost bite, and 1 for severe laceration and fracture of the anterior part of the foot; this latter operation was immediate, and the patient died seven days after it; the three other operations, two of which were on the same patient, were successful.

Of the *two shoulder* joint operations, 1 was made necessary in consequence of accidental injury, and the patient died three days after it; the other was for fungus hæmatodes occupying the upper part of the humerus, and though the patient recovered rapidly after the operation, and left the hospital in apparent good health, yet he died eighteen months afterwards, from the same disease attacking the internal organs.

Of the *six arms* amputated, all were for bad fractures or lacerations. Four were done within twenty-four hours after the accidents, the other 2 were secondary, and were called for in consequence of the application of tight bandages to fractured limbs before entering the hospital. One of these cases was admitted in the evening twenty hours after he met with the accident, which was a simple fracture of the arm just above the condyles. On entering he complained of great pain in the whole arm and hand; the arm was enveloped in four pasteboard splints, and a very tight, but otherwise well-applied, roller, of the ordinary width, extending from the hand to the axilla. The bandage and splints were instantly removed, and the limb, which was much swollen, red, and very hot, was placed in an elevated position upon a pillow without dressings of any sort. An opiate was administered, and cloths rung out of spirits of camphor were applied to it during the night. On visiting him early on the following morning, I found that gangrene of the hand and fore-arm had taken place, and was spreading rapidly. This extended up as high as the insertion of the deltoid, when a line of demarcation was formed, and the limb was removed by Dr. Hewson. The man recovered. The other case was a compound fracture of the lower end of the radius, which happened sixty miles from the city, and was received at the hospital five days after the accident, suffering agonizing pain. A tight bandage and splints, extending from the elbow to the palm of the hand, had been applied within an hour after he met with the accident. These had not been in any way disturbed, and on removing them on admission, the soft parts over the seat of the fracture were found to have sloughed, the radius was projecting, an abscess extended up to the elbow joint, and sloughs existed over the condyles. The severe constitutional symptoms which soon followed this state of things, made it necessary to remove the arm in its middle part, after which the patient recovered.

Death took place in each of the two fatal cases, on the third day after the operation.

Of the *thirteen fore-arms* amputated, 11 were cured and 2 died. Two were for caries of the wrist, both of which were cured; the 11 remaining were made necessary in consequence either of bad lacerated wounds, or fractures, and of these 8 were immediate and 3 not. One of the deaths occurred within twenty-four hours after the operation, and the other not till some weeks had elapsed.

In two seamen, amputation in the continuity of the metacarpal bones became necessary, on account of gangrene, produced by exposure to cold. In both cases excellent stumps were made, and the increased motion between the carpal bones and those of the fore-arm, made the parts of the hand saved of great utility to the patient.

Of the above 56 amputations on 55 patients, 24 were primary, of which 14 were cured and 10 died; 4 of the deaths occurring within the twenty-four hours immediately following it; 12 were secondary, of which 5 were cured and 7 died; 20* were for the cure of chronic affections, of which 15 were cured and 4 died; 23 of the amputations were of the upper extremity, of which 18 were cured and 5 died; 33 were of the lower extremity, of which 17 were cured and 16 died; 6 were amputations at the joints, of which 4 were cured and 2 died.

Of the 55 patients operated on,

9 were under 20 years of age,	of whom	8	were cured and	1 died.
21 between 20 and 30	"	15	"	7
16 between 30 and 40	"	9	"	7
9 between 40 and 50	"	3	"	6

From this resumé of seven years practice at the Pennsylvania Hospital, it appears,

1st. That amputation is to be regarded as an operation attended with much danger to the life of the individual.

2nd. That the chances of success after it are much greater in persons who have been for some time suffering from chronic diseases, than in those who have it done whilst enjoying robust health.

3d. That amputation of the lower extremity is much more fatal than that of the superior member, and

4th. That the danger increases with the age of the individual operated on.

I possess no means for comparing these results with any tabular statements of the success after amputations had in other public institutions, either in this country or in Europe, but the following have been published by some French surgeons as the results of their indi-

* One of the patients here included suffered double amputation.

vidual practice. In all of them attempts at union by the first intention, are stated to have been made.

Surgeons.	*No. of Observations.*	*Proportion of Deaths.*
Dupuytren,*	29	1 in 3
Roux,†	—	1 in 3
Hyp. Larrey,‡	57	1 in 6
Dubois,§	28	1 in 9

The unfortunate termination of amputations in France, is attributed, by their surgeons, in the generality of cases, to phlebitis and purulent absorptions. For a long period this termination was thought to be very rare in this country, but post-mortem examination has made known the existence of it in many of the deaths that took place with us, and from all the information I have been able to obtain, I am led to believe that it occurred in the majority of them.

Philadelphia, June, 1838.

ART. VI. *Cases of Disease of the Heart, with Observations.* By EDWARD HALLOWELL, M. D.

CASE I. *Warty Vegetation of Semilunar Valve of Pulmonary Artery, occurring in a child six months old; Hypertrophy of right Ventricle; dilatation of right Auricle; Cyanosis.*—Emeline Whelan, ætat six months, had, from birth, been more or less affected with difficulty of respiration, and latterly much subject to cough. During the paroxysm of cough, the face became suffused, and the nails and ends of the fingers cyanosed. I did not see her until after her death, when I was requested to make the autopsy, by Dr. Elkinton, who was called to visit her in her last moments.

Autopsy, November 17, 1834.—*Exterior.* Body well formed; embonpoint considerable; no œdema of either upper or lower extremities; fingers curved inward, and of a purplish colour.

Head not examined.

Thorax. Lungs perfectly healthy, not engorged in the slightest degree, of a light pink or rosy hue, and perfectly crepitant throughout; mucous membrane of trachea and bronchial tubes slightly injected; pleura perfectly healthy, cavity containing no serosity; *heart*

* Leçons Orales, Tom. IV.
† Mem. et Observ. sur la Réunion.
‡ Sanson. de la Réunion des Plaies.
§ Ibid.